CLAIMS

What is claimed is:

1. An apparatus comprising:

a decoder to decode a plurality of data streams, said decoder having a state associated with each of said data streams; and

state restoration logic to restore said decoder's state upon switching from decoding one data stream to another data stream.

2. The apparatus as in claim 1 wherein said state restoration logic comprises:

one or more memory arrays for storing said states associated with each of said data streams.

3. The apparatus as in claim 2 having a memory arrays equal in number to said plurality of data streams decoded by said decoder.

4. The apparatus as in claim 1 wherein said decoder is a Viterbi decoder.

5. The apparatus as in claim 1 wherein said states associated with each of said data streams may be described by a trellis diagram.

6. The apparatus as in claim 5 wherein said states associated with each of said data streams are comprised of survivor path data.

1   7. The apparatus as in claim 2 wherein said array is a forward-tracing

2   decode array.

1   8. The apparatus as in claim 1 wherein each of said data streams

2   comprises multimedia data transmitted from a satellite transponder.

1   9. The apparatus as in claim 2 wherein said state restoration logic

2   further comprises:

3   an accumulator buffer for temporarily storing accumulator values

4   associated with each of said data streams, said accumulator values representing

5   path metric values and being readable from said accumulator buffer to restore

6   said state.

1   10. A method for concurrently decoding a plurality of data streams

2   comprising:

3   decoding a first portion of a first data stream in said plurality, said first

4   data stream having a state associated therewith following said decoding of said

5   first portion;

6   decoding portions of other data streams in said plurality;

7   restoring said state associated with said first data stream; and

8   decoding a second portion of said first data stream.

1   11. The method as in claim 10 wherein each of said plurality of data

2   streams has a memory array associated therewith, said memory arrays storing

3   states associated with each of said data streams, and

4   wherein restoring said state associated with said first data stream

5   comprises switching to processing data through said memory array associated

6   with said first state.

1   12. The method as in claim 10 wherein decoding comprises Viterbi

2   decoding and said state comprises survivor path data associated with said

3   Viterbi decoding.

1   13. The method as in claim 12 wherein said state further comprises a

2   plurality of path metric values.

1   14. An apparatus comprising:

2   a plurality of data arrays for storing survivor path data for a plurality of

3   data streams;

4   a buffer for storing a plurality of path metric values associated with each of

5   said data streams; and

6   state restoration logic for selecting a particular data array and a particular

7   set of path metric values associated with a particular data stream upon receiving

8   a signal indicating a switch to decoding said particular data stream.

1   15. The apparatus as in claim 14 wherein said data arrays are forward

2   tracing arrays.

1   16. The apparatus as in claim 15 wherein decoding comprises Viterbi

2   decoding and said path metric values and said survivor path data are associated

3   with a Viterbi trellis.

1   17. The apparatus as in claim 14 wherein said indication of a switch from

2   decoding one stream to another occurs are regular periodic intervals.

1   18. A machine-readable medium having code stored thereon which

2   defines an integrated circuit (IC), said IC comprising:

3   a decoder to decode a plurality of data streams, said decoder having a

4   state associated with each of said data streams;

1   state restoration logic to restore said decoder's state upon switching from

2   decoding one data stream to another data stream.

1   19. The machine-readable medium as in claim 18 wherein said IC further

2   comprises:

3   one or more memory arrays for storing said states associated with each of

4   said data streams.

1   20. The machine-readable medium as in claim 19 wherein said memory

2   arrays are equal in number to said plurality of data streams decoded by said

3   decoder.

1   21. The machine-readable medium as in claim 20 wherein said decoder is

2   a Viterbi decoder.

1   22. The machine-readable medium as in claim 20 wherein said states

2   associated with each of said data streams may be described by a trellis diagram.

1   23. The machine-readable medium as in claim 22 wherein said states

2   associated with each of said data streams are comprised of survivor path data.

1   24. The machine-readable medium as in claim 21 wherein said array is a

2   forward-tracing decode array.

1   25. The machine-readable medium as in claim 20 wherein each of said

2   data streams comprises multimedia data transmitted from a satellite

3   transponder.

1   26. The machine-readable medium as in claim 21 wherein said state

2   restoration logic further comprises:

3   an accumulator buffer for temporarily storing accumulator values

4   associated with each of said data streams, said accumulator values representing

5   path metric values and being readable from said accumulator buffer to restore

6   said state.